

Wildlife Effects Analysis

Hourglass Project

La Grande Ranger District, Wallowa-Whitman National Forest

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WILDLIFE BIOLOGICAL EVALUATION

Introduction

An endangered species is an animal or plant species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range. A threatened species is an animal or plant species listed under the Endangered Species Act that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. A sensitive species is an animal or plant species identified by the Forest Service Regional Forester for which species viability is a concern either a) because of significant current or predicted downward trend in population numbers or density, or b) because of significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. The R6 Sensitive Species list pertinent to this project is dated August, 2015. Threatened, endangered, and sensitive species effects are summarized in this report by TES status and species.

As part of the National Environmental Policy Act (NEPA) decision-making process, biological evaluations (BE) are required to determine how proposed FS management activities may affect Proposed, Endangered, Threatened, or Sensitive (PETS) species or their habitats (U.S. Forest Service Manual [FSM] 2670). This evaluation presents existing information on PETS species and their habitat in the project area, and describes the anticipated direct, indirect, and cumulative effects resulting from the proposed project. The review is conducted to ensure that FS actions do not contribute to the loss of species viability or cause a species to move toward federal listing (43 U.S.C. 1707 et seq). Threatened and Endangered species are managed under authority of the Federal Endangered Species Act (ESA) (36 U.S.C. 1531-1544) and the National Forest Management Act (NFMA) (16 U.S.C. 1600-1614). The ESA requires Federal agencies make certain all actions they authorize, fund, or carry out will not likely jeopardize the continued existence of any threatened or endangered species. Sensitive species are those recognized by the Region 6 Regional Forester as needing special management to meet NFMA obligations. FS policy requires a BE to determine possible effects to sensitive species from proposed management activities.

PRE FIELD REVIEW

The following proposed, endangered, threatened, or sensitive species (PETS) of wildlife are listed on the Regional Forester's Sensitive Species List (January 2015; Table 1). Only those PETS, or their habitats, known or suspected to occur in or immediately adjacent to the analysis area are addressed in this BE.

Table 1. PETS Species Review, WWNF and Two Eagle Project Area

Common Name	Scientific Name	USFWS Status	USFS Status	WWNF Occurrence/ Hourglass Occurrence	Addressed Further in this BE
Amphibians					
ROCKY MOUNTAIN TAILED FROG	<i>Ascaphus montanus</i>		SEN	D/N	
Tailed frogs are strongly adapted to cold water conditions. They occur in very cold, fast-flowing streams that contain large cobble or boulder substrates, little silt, often darkly shaded, and less than 20°C (Bull and Carter 1996). The project area does not contain suitable habitat					
COLUMBIA SPOTTED FROG	<i>Rana leuventris</i>		SEN	D/N	
This species is found at aquatic sites in a variety of vegetation types, from grasslands to forests (Csuti et al. 1997). Spotted frogs have not been documented in the project area and suitable habitat does not exist within the project area.					
Birds					
UPLAND SANDPIPER	<i>Bartramia longicauda</i>		SEN	S/N	
Suitable habitats in Oregon consist of large montane meadows ranging from 1,000 to 30,000 acres, generally surrounded by lodgepole pine (Marshall et al. 2003). The project area lacks suitable habitat, and no known sightings are reported for the area.					
AMERICAN PEREGRINE FALCON	<i>Falco Peregrinus Anatum</i>		SEN	D/N	
GREATER SAGE-GROUSE	<i>Centrocercus urophasianus</i>		SEN	S/N	
Suitable habitats are associated with sagebrush. The project area lacks suitable habitat and known sightings for sage grouse.					
BUFFLEHEAD	<i>Bucephala albeola</i>		SEN	S/N	
Known breeding range in Oregon is restricted to the Cascades. Breeding habitat consists of high-elevation lake or pond habitat surrounded by forest (ODFW 2006). The project area lacks suitable habitat, and no known sightings are reported for the area.					
BALD EAGLE	<i>Haliaeetus Leucocephalus</i>	DELISTED	SEN	D/N	
Nesting habitat consists of large conifers within 1 km of water containing adequate supply of medium to large fish (Johnsgard 1990). No known nest sites exist within the project area. The project area does not contain potential foraging habitat or the potential for species occurrence.					
LEWIS' WOODPECKER	<i>Melanerpes Lewis</i>		SEN	D/H	X
Primary breeding habitats include open ponderosa pine, riparian cottonwood, and logged or burned pine (Tobalske 1997). Ponderosa pine habitat within the project area makes occurrence possible.					
WHITE-HEADED WOODPECKER	<i>Picoides Albolarvatus</i>		SEN	D/H	X
Nesting habitat consists of open-canopy stands with mature and overmature ponderosa pine (Buchanon et al. 2003). Suitable habitat occurs within the project area.					
COLUMBIAN SHARP-TAILED GROUSE	<i>Tympanuchus Phasianellus Columbianus</i>		SEN	D/N	

Potential habitats consist of bunchgrass prairies interspersed with stam bottoms containing deciduous shrubs and trees. The species was extirpated from Oregon, but has been reintroduced into northern Wallowa County (ODFW 2010). No sightings or potential suitable habitat occur within or adjacent to the project area. Occurrence within the project area is unlikely.					
MAMMALS					
CANADA LYNX	<i>Lynx Canadensis</i>	THREATENED		D/N	
The species is classified as "not present" on the WWNF					
GRAY WOLF	<i>Canis Lupus</i>	DELISTED	SEN	D/H	X
Gray wolves are habitat generalists inhabiting a variety of plant communities, typically containing a mix of forested and open areas with a variety of topographic features. There is the potential for wolves to move through the project area					
FISHER	<i>Martes Pennanti</i>		SEN	S/N	
Preferred habitat consists of late-successional conifer forests. No sightings have been reported for northeastern Oregon since 1976, leaving no evidence for an extant population in the Wallowa Mountains (Aubrey and Lewis 2003).					
CALIFORNIA WOLVERINE	<i>Gulo Gulo Luteus</i>	CANDIDATE	SEN	D/N	
Preferred habitat consists of alpine and subalpine areas with little or no human presence. The hourglass project area does not contain any suitable habitat.					
TOWNSENDS BIG-EARED BAT	<i>Corynorhinus townsendii</i>		SEN	S/N	
This bat roosts in buildings, caves, mines, and bridges and the presence of suitable roost sites is more important than the vegetation type in determining the distribution of this bat. There are no known roost sites for Townsends within the Hourglass project area.					
SPOTTED BAT	<i>Euderma maculatum</i>		SEN	S/N	
Spotted bats primarily rely on crevices and caves in tall cliffs for roosting which likely determine their distribution. The Hourglass project area lacks tall cliffs, making occupancy unlikely.					
FRINGED MYOTIS	<i>Myotis thysanodes</i>		SEN	D/H	x
This bat is found throughout much of western North America and has been documented on the Wallowa-Whitman. Roosting in decadent trees and snags is common throughout its range. The presence of large trees within the project area makes occurrence likely.					
MOLLUSKS					
FIR PINWHEEL	<i>Radiodiscus Albietum</i>		SEN	D/H	X
Most often found in moist and rocky Douglas-fir forest at mid-elevations in valleys and ravines (Frest and Johannes 1995). Recent surveys performed in the La Grande district have found the speices to exist on the Wallowa-Whitman forest. The presence of moist Douglas-Fir forests in the project area indicates habitat it available.					
COLUMBIA GORGE OREGONIAN	<i>Cryptomastix hendersoni</i>		SEN	S/N	
Land snail found in rather open and dry large-scale basalt taluses, generally at lower elevations. Most colonies occur at slope bases along the major river corridors, not in major tributaries. Associated vegetation includes <i>Celtus</i> , <i>Artemisia</i> , <i>Prunus</i> , <i>Balsamorhiza</i> , and <i>Seligeria</i> . Surrounding vegetation is generally sage scrub. Generally in steep north or east-facing taluses, often only at the base. Occasionally found in meta sedimentary taluses as well (Frest and Johannes 1995). Lack of basalt talus makes the occurrence of this species unlikely.					
SHINY TIGHTCOIL	<i>Pristiloma wascoense</i>		SEN	S/H	X
Most sites for this species are in ponderosa pine and douglas fir forests at moderate to high elevations. Quaking aspen also provides habitat. Other Pristiloma species in the ecoregion are known to prefer moist microsites such as basalt talus accumulations, usually with riparian influence. Recent surveys have documented this species on the Wallowa-Whitman and potential habitat is present.					

INSECTS					
MEADOW FRITILLARY	<i>Boloria Bellona</i>		SEN	S/N	
The only known site in Oregon is located in Umatilla County (Fleckenstein 2006). The project area is located outside the known distribution of this species.					
SILVER-BORDERED FRITILLARY	<i>Boloria Selene</i>		SEN	S/N	
Suitable habitat consists of bog and marshes, often willowy sites, sometimes tall wet grass (Pyle 2002). No larval host species are reported for the project area, and suitable habitat for this species is unlikely.					
INTERMOUNTAIN SULPHUR	<i>Colias occidentalis pseudochristina</i>		SEN	D/N	
Suitable habitat consists of sagebrush with scattered Ponderosa Pine. No sightings have been documented and suitable habitat is not available in the project area.					
YUMA SKIPPER	<i>Ochlodes yuma</i>		SEN	D/N	
This species has been documented along the Imnaha River in Wallowa Co. It is closely associated with its host plant <i>Phragmites australis</i> . Lack of the presence of the host species within the project area makes occurrence highly unlikely.					
WESTERN BUMBLEBEE	<i>Bombus occidentalis</i>		SEN	D/S	X
The western bumblebee is a habitat generalist and inhabits a wide variety of habitat types, associated with flowering plants. Recent surveys across the Wallowa-Whitman has found them to be distributed across multiple elevations and habitat types. No sightings have been documented within the project area but habitat and distribution indicates occurrence is likely.					

SEN = Sensitive.

¹D = Documented occurrence, S = Suspected occurrence (USDA Forest Service 2009).

² K = Known to occur, S = Suspected to occur, H = Not known to occur, but habitat present, N = No habitat present and/or not present.

Methodology

In general, the analysis area is the same as the project area unless stated below for each species. For cumulative effects, past activities within the project area have been incorporated into the existing condition descriptions below. Present and reasonably foreseeable future actions are described in Appendix D of the EA. Those actions which overlap in time and space with the Two Eagle project which would have a measurable cumulative effect on each of these species are described in the cumulative effects discussions below.

GRAY WOLF

Background Information

Gray wolves are habitat generalists inhabiting a variety of plant communities, typically containing a mix of forested and open areas with a variety of topographic features. Historically, they occupied a broad spectrum of habitats including grasslands, sagebrush steppe, and coniferous, mixed, and alpine forests. They have extensive home ranges and prefer areas with few roads, generally avoiding areas with an open road density >1.0 mi/mi² (Witmer et al. 1998). Dens are usually located on moderately steep slopes with southerly aspects within close proximity to surface water. Rendezvous sites, used for resting and gathering, are complexes of meadows adjacent to timber and near water (Kaminski and Hansen 1984). Both dens and rendezvous sites are often characterized by having nearby forested cover remote from human disturbance. Wolves are strongly territorial, defending an area of 75-150 mi², and home range size and location is determined primarily by abundance of prey. Wolves are generally limited by prey availability and threatened by human disturbance. Generally, land management activities are compatible with wolf protection and recovery, especially actions that manage for viable ungulate populations.

Existing Conditions

The WWNF occurs within the historic range of the gray wolf, and a breeding pack (Catherine Creek Pack) has been identified as using the project area. Potential habitat and adequate prey occurs throughout the project area, and movement through the project area is possible.

Direct and Indirect Effects

Alternative 1 - There would be no direct, indirect, or cumulative impacts to wolves under the no-action alternative because no project activities would occur.

Proposed Action- The proposed action would not affect prey availability and the proposed activities are compatible with breeding wolf populations with relatively minor considerations for disturbance at dens and rendezvous sites. No known den or rendezvous sites are located within or near the project area. For all action alternatives, treatments are expected to have a positive impact big game prey availability (see Rocky Mountain Elk discussion).

Determination

There would be **No Impact (NI)** to the gray wolf from any of the alternatives from this project due to a lack of effects resulting from management activities.

FRINGED MYOTIS (*Myotis thysanodes*)

Background Information

The fringed myotis ranges through much of western North America where distribution is patchy. It appears to be most common in drier woodlands (oak, ponderosa pine) but is found in a wide variety of habitats including desert scrub, mesic coniferous forest, grassland, and sage-grass steppe (OOFarrel et al. 1980). Roosting in decadent trees and snags, particularly large ones, is common throughout its range. The fringed myotis has been documented in a large variety of tree species and it is likely that structural characteristics (e.g. height, decay stage) rather than tree species play a greater role in selection of a snag or tree as a roost (Weller and Zabel 2001). This myotis feeds on a variety of invertebrate taxa. The two most commonly reported orders in its diet are beetles and moths, however several potentially flightless taxa such as harvestmen, spiders, and crickets have been found in its diet. The presence of non-flying taxa in its diet indicates that they may glean prey from vegetation in addition to capturing prey on the wing. The potential to glean prey in concert with its wing-loading, flight style, morphological adaptations of wing and tail membranes, and design of its echolocation call indicate that the fringed myotis is adapted for foraging within forest interiors and along forest edges. The main threats for long term persistence of the fringed myotis is the loss or modification of roosting habitat. Removal of large blocks of forest or woodland habitat may also threaten the species due to its apparent propensity for foraging in and around trees (Bradley and Ports 1998).

Occurrence Information

There is no known records of fringed myotis in the project area. There are no known roost sites, or hibernacula or maternity colonies in the project area. While its occurrence in the project area is unknown, the presence of ponderosa pine forest and permanent water indicate potential habitat may exist.

EFFECTS ANALYSIS

Alternative 1 - Under this alternative, firewood cutting would continue along created roads and the potential for new roads to be created would increase.

Proposed action – Project activities will not remove any snags or trees needed by myotis for roosting. By removing firewood cutting access to interior stands through closing illegally created roads, this project could maintain existing large snags and increase future availability (see snag discussion).

Determination- Due to the potential of reducing current and future snag loss, this project is expected to have a **Beneficial Impact (BI)** on the fringed myotis

LEWIS' WOODPECKER

Background Information

Lewis' woodpecker breeds from southern British Columbia, southwestern Alberta, Montana, and parts of South Dakota and Nebraska, south to central California, and portions of Colorado, Arizona, and New Mexico. The species winters in milder portions of this range from northern Oregon to northern Mexico and west-Texas. In Oregon, the species was formerly widespread. It is known to breed in the eastern Cascades, and in low numbers along river and stream valleys in central and eastern Oregon (Marshall et al. 2003).

The species' five major habitat types include ponderosa pine, oak-pine woodlands, cottonwood riparian forests, and areas burned by fire. Special needs consist of aerial insect populations for foraging, large soft or well-decayed snags for nesting, and relatively open canopy for flycatching (ODFW 2006). Thomas (1979) identified the minimum snag diameter suitable for Lewis' woodpecker as 12 inches, while Saab and Vierling (2001) reported average snag size used by the species in conifer stands as about 18 inches DBH (diameter base height). According to Sousa (1983), habitat suitability is moderate or greater when canopy closure is less than 50% and optimal when canopy is less than 30%. Other components of suitable habitat include at least one snag per acre greater than 12 inches DBH and an available shrub layer (Sousa 1983).

Occurrence Information

Suitable habitat currently exists within forested habitat of the project area and within the associated riparian areas.

Direct and Indirect Effects

Alternative 1 - Under this alternative, firewood cutting would continue along created roads and the potential for new roads to be created would increase.

Proposed action– Project activities will not remove any snags or trees needed by the woodpecker for roosting. By removing firewood cutting access to interior stands through closing illegally created roads, this project could maintain existing large snags and increase future availability (see snag discussion).

Determination- Due to the potential of reducing current and future snag loss, this project is expected to have a **Beneficial Impact (BI)** on the Lewis woodpecker.

WHITE-HEADED WOODPECKER (*Picoides albolarvatus*)

Background Information

This woodpecker is closely associated with open ponderosa pine or mixed conifer dominated by ponderosa pine (Csuti et al. 2001). Although most abundant in uncut old-growth forest stands, white headed woodpeckers will use areas where silviculture treatments provide sufficient densities of large-diameter ponderosa pines. It requires large trees for foraging and snags for nesting (Csuti et al. 2001). An Oregon study found that they spent most of their time foraging in trees greater than 20 inches in diameter and nest trees averaged 18 inches in diameter. Nest sites are usually excavated in snags but can also occur in stumps, leaning logs, and dead tops of live trees. It is the only woodpecker that relies heavily on ponderosa pine seeds for food. It forages on the trunks, branches, and foliage of large-diameter ponderosa pine for pine seeds and insects. It rarely drums or taps and feeds by scaling back off trees to reach insects underneath.

Occurrence information

The white-headed woodpecker is an uncommon permanent resident in forests of the Ochoco, Blue, and Wallowa Mtns. Past, present, and ongoing habitat loss pose a threat to the continued existence of the species throughout its range (Wisdom et al. 2000). The amount of old-growth ponderosa pine left in Oregon is unknown, but it is probably less than 10% of what occurred in pre-European settlement (Marshall 1997). Among the most significant and greatest declining wildlife habitat in the Interior Columbia Basin is late and old-growth forest structure. Wisdom et al (2000) concludes that source habitat for most species declined strongly from historical to current periods across large geographic areas, that the steepest declines were for species dependent on low elevation, old forest habitats, and that the white-headed woodpecker has experienced the sharpest reduction of any species associated with late and old forest habitat. Much of the remaining late and old forest structure exists in isolated remnant stands. The loss has occurred mainly through a combination of timber harvest, road building, and wildlife. Motorized access into these areas increases the potential for disturbance and habitat fragmentation, and reduces habitat quality through the removal of snags and logs by firewood cutters (Wisdom et al 2000).

Direct and Indirect Effects

Alternative 1 - Under this alternative, firewood cutting would continue along created roads and the potential for new roads to be created would increase.

Proposed action— Project activities will not remove any snags or trees needed by the woodpecker for roosting. By removing firewood cutting access to interior stands through closing illegally created roads, this project could maintain existing large snags and increase future availability (see snag discussion).

Determination- Due to the potential of reducing current and future snag loss, this project is expected to have a **Beneficial Impact (BI)** on the white-headed woodpecker.

FIR PINWHEEL (*Radiodiscus abietum*), SHINY TIGHTCOIL (*Pristiloma wascoense*)

Effects are anticipated to be similar due to similar habitat, ecology, threats

Radiodiscus abietum is ranked as S1 (Critically Imperiled) in Oregon (ORBIC 2016). It is a terrestrial pulmonate snail originally collected from near the mouth of the East Fork Weiser River in Idaho (Baker 1930).

Pristiloma wascoense is ranked as S2 (Imperiled) in Oregon and (ORBIC 2016). It is a terrestrial pulmonate snail originally collected from Wasco County in Oregon (Hemphill 1911).

Habitat Information-

Radiodiscus abietum -Generally found in rather moist, rocky forested terrain, at medium-high elevations. Most often, the dominant vegetation is *Pseudotsuga menziesii* forest, with a rich understory including many forbs, deciduous shrubs and bryophytes. Frest and Johannes (1995) describe it as a mesophile species, apparently feeding on partly decayed leaves and organic debris in soil. They also note that it is most commonly found in remnant moist forest patches at moderate elevations but is never abundant.

Pristiloma wascoense -The species has been reported from ponderosa pine and Douglas-fir forested habitat at high elevations, as well as from moist, shaded talus habitat with deciduous trees; moist microsites associated with talus or riparian habitat may be typical for members of the genus (Jordan 2010). Burke (2013) notes the species may often be found in the vicinity of deciduous trees such as aspen and cottonwood. Associated mollusks include *Anguispira kochi*, *Cryptomastix mullani*, *Euconulus fulvus*, *Punctum randolphi*, and *Discus whitneyi* (Frest and Johannes 1995, Jordan 2010).

Occurrence information- Until recently these species had only been suspected to occur on the Wallowa-Whitman but surveys conducted by the Xerces society on the La Grande district in 2016 and forest wide surveys conducted by district biologists in 2018 found them to be distributed across the forest, primarily correlated with high canopy cover.

Threats- Threats include logging of high canopy cover moderate-elevation douglas fir forest, grazing and severe forest fires (Frest and Johannes 1995).

Direct and Indirect Effect

Alternative 1 - There would be no direct, indirect, or cumulative impacts to this species under the no-action alternative due to a lack of proposed management activities.

Proposed action – Project activities will not remove canopy cover and are intended to rehabilitate soil conditions.

Determination- Due to the lack of tree removal or disturbance of down woody debris associated with this project, it is expected to have **No Impact (NI)** on the *radiodiscus abietum* or *pristiloma wascoense*.

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WILDLIFE EFFECTS ANALYSIS

Introduction

This analysis describes the terrestrial wildlife species found in the project area and the potential effects of the Hourglass project on these species. Rather than addressing all wildlife species, discussion focuses on Forest Plan management indicator species (MIS) see threatened, endangered and sensitive (TES) species (see Wildlife BE). The existing condition is described for each species, group of species, or habitat. Direct, indirect and cumulative effects of alternatives are identified and discussed. Supporting wildlife documentation is located the Project Record, and includes detailed data, methodologies, analyses, conclusions, maps, references and technical documentation used to reach conclusions in this environmental analysis.

Management Indicator Species (MIS)

The geographic ranges of the MIS are larger than the project area, thus the analysis of adequacy of habitats for viable populations of MIS needs to be done at a scale larger than the individual project. “Habitat must be provided for the number and distribution of reproductive individuals to ensure the continued existence of a species generally throughout its current geographic range” (FSM 2620.1). Provisions for contributing to viable populations are determined at the level of the Forest Plan through management requirements, goals and objectives, standards, guidelines, prescriptions, and mitigation measures to ensure that habitat needs of MIS will be sufficiently met during plan implementation at the project level (FSM 2621.4). Analysis for each MIS includes an assessment of consistency with the provisions identified in the Forest Plan.

Cumulative effects of proposed management activities on habitat capability for MIS are evaluated (FSM 2620.3). Best available science is considered in this analysis in assessing project impacts to MIS.

The LRMP identifies 5 wildlife species, or groups of species, as MIS (Table 1) (US Forest Service 1990). These species serve as indicators of the effects of management activities by representing habitat for a broad range of other wildlife species. The habitat requirements of MIS are presumed to represent those of a larger suite of species using the same type of habitat. All MIS have the potential to be present in the project area.

Table 1. MIS and Their Primary Habitats.

Species	Habitat
Pacific marten	Old-growth and mature forest
Northern goshawk	Old-growth and mature forest
Pileated woodpecker	Old-growth and mature forest
Primary cavity excavators ¹	Snags and logs
Rocky Mountain elk	Cover and forage

¹ Northern flicker; black-backed, downy, hairy, Lewis', three-toed, and white-headed woodpeckers; red-naped and Williamson's sapsuckers; black-capped, chestnut-backed, and mountain chickadees; and pygmy, red-breasted, and white-breasted nuthatches

Pacific Marten, Northern Goshawk, Pileated Woodpecker

Analysis is combined because existing conditions and effects are similar (specific to this project).

Wales (2011) used Bayesian Belief Network (BBN) Models to conduct viability assessments for various wildlife species of interest at the Blue Mountains and WWNF scales, including the pacific marten, northern goshawk and pileated woodpecker. Using different metrics of canopy closure, tree diameters, and potential vegetation groups, Wales defined source habitat (habitat required for breeding). According to these models, no source habitat will be impacted by project activities. Additionally project activities will not affect existing canopy closure or tree diameter. There is potential for this project to have a beneficial impact on snag retention and beneficial effect on source habitat (see snag discussion). ***Due to the localized nature of the project, lack of negative effects to source habitat and the beneficial impact expected, these species will not be analyzed further as this projected will not affect population viability at the watershed or forest level.***

Rocky Mountain Elk

Rocky Mountain elk have been selected as an indicator of habitat diversity, interspersed cover and forage area, and security habitat provided by areas of low human disturbance. Elk exploit a variety of habitat types in all successional stages and their patterns of use change daily and seasonally (Toweill and Thomas 2002).

Displacement of elk from areas during human activities (e.g. logging, fuels reduction) is well documented (Edge 1982, Toweill and Thomas 2002, Wisdom et al. 2005a). This displacement is mostly temporary, with no evidence that elk will not eventually return to harvested areas (Toweill and Thomas 2002). Resource managers are primarily concerned with the establishment of roads associated with harvest activities that

increase motorized recreation (e.g. hunter, hikers, cross country skiers, OHV). Increased road significantly reduces elk security habitat (Towill and Thomas 2002), increases individual stress levels (Creel et al. 2002), and elk vulnerability to mortality from both legal and illegal hunter harvest (Rowland et al. 2005). ***For the purpose of this project, effects are focused on the impacts of motorized vehicle disturbance.***

The project area lies within the Catherine Creek Unit, which is currently at 145% of the management objective. Portions of this project area overlap with an older vegetation management project, Bald Angel. One outcome of the Bald Angel project was a travel management area which was focused on increasing elk security habitat, a habitat component that the surrounding watersheds are lacking. Currently, the Catherine Creek watershed contains 11% high quality security habitat with best available science suggesting that 30% is the goal within a watershed. Encroachment of illegally created non-system roads within the TMA reduces its effectiveness and degrades security habitat, resulting in a negative effect to both elk and hunters.

Preventing motorized vehicle use on these non-system roads will increase the effectiveness of security for elk and the majority of wildlife within the watershed and have a positive effect for wildlife and recreation.

Primary Cavity Excavators

The Forest Plan identifies 15 primary cavity excavators as management indicator species (MIS) for the availability and quality of dead and defective wood habitat: northern flicker; black-backed, downy, hairy, Lewis', three-toed, and white-headed woodpeckers; red-naped and Williamson's sapsuckers; black-capped, chestnut-backed, and mountain chickadees; and pygmy, red-breasted, and white-breasted nuthatches.

The abundance of cavity-using species is directly related to the presence or absence of suitable cavity trees. Habitat suitability for cavity-users is influenced by the size (diameter and height), abundance, density, distribution, species, and decay characteristics of the snags. In addition, the structural condition of surrounding vegetation determines foraging opportunities (Rose et al. 2001). Not every stage of the snag's demise is utilized by the same species, but rather a whole array of species use the snag at various stages or conditions. Uses of snags include nesting, roosting, foraging, perching, courtship, drumming, and hibernating.

Existing Conditions

Snag levels across the forest have declined in relation to historical availability (Wisdom et al. 2000). At the project scale, Catherine Creek watershed is deficient in large snags and provides for MIS species like pileated woodpecker and williamsons sapsucker only at the 30% tolerance limit (see Wildlife Specialist Report- Sandbox Vegetation Project 2013). One known threat to snags is open roads as woodcutting activities dramatically reduce the availability of snags along open road systems (Wisdom et al. 2000).

Preventing the continued use and creation of non-system roads within the watershed will have a positive impact on the availability and retention of snags within the watershed.

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